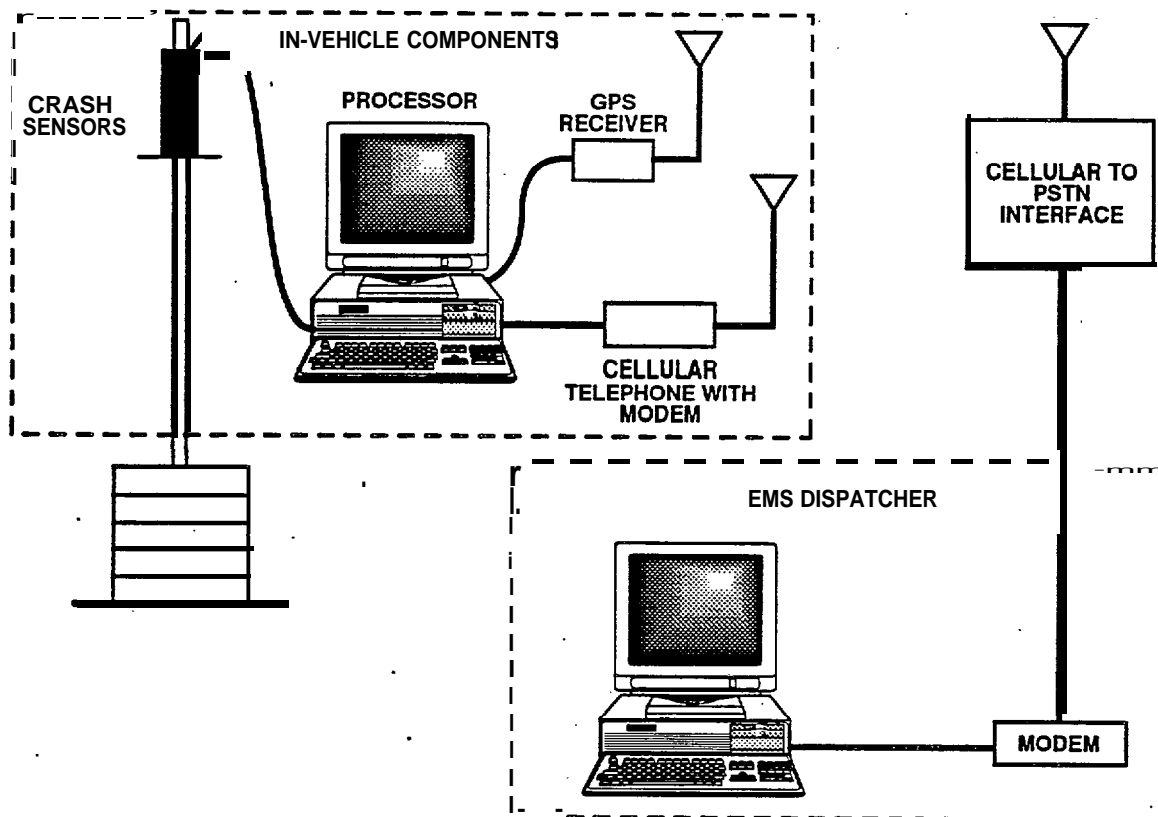Appendix G

END-TO-END DEMONSTRATION

Since it was determined that existing technologies could support 'the individual ACN functions, a demonstration system was assembled using the various test devices as the system components as shown in Figure G-l. This system uses the crash simulator (described in Section D.3) to generate decelerations representative of a crash. A desktop PC, which represents the in-vehicle processor identified in Section 1, monitors the sensors in real-time. If the accelerations are large enough to cause a crash threshold crossing, then the PC obtains a location estimate using the GPS receiver, initiates a cellular telephone call, 'and transmits the GPS receiver location (using a modem) to another phone connected to the PSTN. This phone theoretically resides in an EMS dispatch facility. A modem connected to the phone provides the interface to another PC so that the crash location can be obtained. Software on the PC allows the crash location to be displayed on a map to facilitate dispatch.

Although this demonstration system is desktop PC based, it does indicate the feasibility of combining the three technologies into an operational system. To further demonstrate feasibility and to identify technological and institutional issues, it is necessary to repackage the in-vehicle components and integrate them into an automobile. Not only could vehicle integration issues be examined but over-the-road testing to evaluate system reliability and the EMS interface could be performed. False alarm data could also be obtained during this testing; however, it is not necessary to have a fully operating system to collect these data. As a final step leading to operational testing of this system, the components could be crash tested to verify in-vehicle component and design survivability, -In this way, many critical issues can be addressed before full scale operational testing is conducted, minimizing risk and maximizing benefits.

CRASH SENSORS

IN-VEHICLE COMPONENTS

PROCESSOR

GPS RECEIVER

CELLULAR TELEPHONE WITH MODEM

CELLULAR TO PSTN INTERFACE

EMS DISPATCHER

MODEM

94.094.5-1

Figure G-1 End-to-End Demonstration